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ABSTRACT

This paper reviews a sample of follow-up studies conducted by community colleges to determine the employment experiences of occupational program graduates. Part I discusses the types of follow-up studies conducted, including institutional follow-up studies of graduates from individual vocational programs, of all vocational graduates, and of vocational graduates and their employers; and statewide follow-up studies of community college vocational graduates. A discussion of the limitations of these studies follows, focusing on the one-shot nature of their designs; failure to control for respondent bias; absence of control groups; lack of control for prior employment experience; infrequent disaggregation of findings by program; and inconsistency in data collection efforts among cooperating colleges. Part II summarizes the findings of studies as they relate to employment rates of graduates, the relationship between graduates' employment and their community college training, further education taken by graduates, graduates' satisfaction with their training at college, and employer assessment of graduates as employees. Finally, Part III proposes a centrally-coordinated statewide research effort as a means of improving understanding of the relationship between community college vocational education and employment. (Author/LAL)

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ASSESSING THE EMPLOYMENT EXPERIENCES OF COMMUNITY COLLEGE VOCATIONAL PROGRAM GRADUATES: A REVIEW OF INSTITUTIONAL FOLLOW-UP STUDIES

Jim Palmer

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ASSESSING THE EMPLOYMENT EXPERIENCES OF COMMUNITY COLLEGE VOCATIONAL PROGRAM GRADUATES: A REVIEW OF INSTITUTIONAL FOLLOW-UP STUDIES

INTRODUCTION

Associate degree programs that are designed to prepare students for immediate employment in occupations that require at least one but no more than two years of postsecondary education are becoming an ever larger part of the community college curriculum. Rapidly growing occupational enrollments in the 1970s — chronicled elsewhere by Lombardi (1978) and by Cohen and Brawer (1982) — have been paralleled by a growth in the number of associate degrees awarded in occupational curricula. From 1973-74 through 1980-81 the number of associate degrees awarded nationwide in occupational curricula rose by approximately 45 percent, while the number of associate degrees awarded in transfer curricula increased by only 5.4 percent (ERIC Clearinghouse for Junior Colleges, 1984).[1] Clearly, community colleges and two-year postsecondary technical institutes — which probably account for the vast majority of associate degrees awarded — have invested a good deal of their institutional credibility in the ability to provide students with marketable job skills and an avenue to employment.

In light of this, and in response to recent evidence that many community college vocational students do not achieve their employment objectives (Wilms and Hansell, 1982), it is increasingly important for community college administrators to follow up on the employment experiences of their associate degree graduates. Indeed, Mehallis

and Mehallis (1983) report that growing numbers of states require follow-up studies of community college vocational students and that placement rates and competence of graduates at the workplace (as perceived by the employer) are key elements of program evaluation. Follow-up studies, then, are central to the community college institutional research effort.

How are these studies carried out, and what are their findings? This paper reviews a sample of follow-up studies conducted by community colleges to determine the employment experiences of occupational program graduates. Part I discusses the types of follow-up studies conducted and examines limitations inherent in their designs. Part II summarizes the findings of these studies as they relate to employment rates of graduates, the relationship between graduates' employment and their community college training, further education undertaken by graduates, graduates' satisfaction with their training at college, and employer assessment of graduates as employees. Finally, Part III proposes a centrally-conducted, statewide research effort as a means of improving our understanding of the relationship between community college vocational programs and employment.

PART I: FOLLOW-UP STUDIES AND THEIR LIMITATIONS

In order to identify community college vocational follow-up studies, I conducted a computer search of the ERIC database and — as a check of my computer search strategy — a manual search of the indexes to the documents processed by the ERIC Clearinghouse for

Junior Colleges. Of the community college follow-up studies in ERIC (there are hundreds), those chosen for review met three criteria. First, those items chosen provide data on graduates who have received associate degrees in occupational programs. Documents providing information on associate degree graduates without differentiating between transfer and occupational curricula were not considered, along with studies that follow up former occupational students without making the distinction between graduates and nongraduates. Second, I did not consider reports involving student follow-up surveys that achieved response rates of less than 50 percent. Third, I disregarded documents that deal solely with graduates from associate degree nursing programs; the large body of literature on this topic would have skewed the focus of this paper from the employment of associate degree holders in general to the issues surrounding the credentials debate in the nursing profession. Forty-eight documents met my criteria and form the basis of this review.

Appendices A through D present tabular summaries of these 48 studies. Among these reports, four broad types can be summarized:

(1) Institutional follow-up studies of graduates from individual vocational programs (Appendix A). These studies detail college efforts to assess the employment experiences of graduates from programs in animal health technology, dietetic technology, dental hygiene, legal technology, hotel/restaurant management, operating room technology, and radiologic technology.

(2) Institutional follow-up studies of all vocational graduates (appendix B). These reports provide data on entire graduating classes of vocational students.

(3) Institutional follow-up studies of vocational graduates AND their employers (Appendix C). These reports also examine the employment experiences of entire graduating classes and include surveys of the employers of those graduates.

(4) Statewide follow-up studies of community college vocational graduates (Appendix D). These represent the efforts of state education agencies to provide a statewide picture of the placement and employment experiences of community college vocational graduates.

The findings of these studies can be considered, however, only in the light of their limitations: the one-shot nature of their designs; failure to control for respondent bias; absence of control groups; lack of control for the employment experiences of graduates prior to matriculation in the community college; infrequent disaggregation of findings by program; and — in the case of statewide surveys — inconsistencies in data collection efforts among cooperating colleges. These problems are discussed below.

The One-Shot Follow-Up

Of all the studies considered in this review, only those by Walleri (1979, 1981) provide a longitudinal look at community college vocational students. Most researchers assess graduate employment experiences on the basis of a one-shot survey conducted anywhere from six weeks to three years after graduation. (Valvoda and others, 1977, conducted their "follow-up" study just prior to graduation exercises!) Three studies (DeVuyst, 1978; Gorter and Collins, 1978; and Virginia State Department of Community Colleges, 1977) survey different graduating classes at the same time and present findings by year of graduation. This makes it possible to at least draw some inferences about the employment status of graduates at different time periods after graduation (although the response rates of

graduating cohorts from earlier years are uniformly lower). The remaining studies are conducted under the a priori assumption that graduate employment patterns will be sufficiently settled within a short period of time after receiving the associate degree. They provide no justification for this assumption other than the rationale that vocational programs should lead to immediate employment.

Respondent Bias

Another common limitation of these studies is the failure to control for respondent bias. Relatively few authors attempt to sample nonrespondents and make comparisons between those who return survey instruments and those who do not. Selgas (1977) compared respondents with nonrespondents on the basis of the percent in each group who had actually planned to receive an associate degree at the time of college entrance, college grade point average, and age. Researchers at the Maryland State Board for Community Colleges (1983) made a similar comparison on the basis of sex, race, college, and program of study; findings indicate that minorities were less likely to have responded, but the statistical significance of this difference is not indicated. More detailed comparative criteria are used by Eyler and others (1974) who compare respondents with nonrespondents on the basis of father's education, initial post-college earnings, ratings of job satisfaction, ratings of technical knowledge gained at the community college, and graduate evaluations of the college counseling services and of the college experience in general. Eyler and his associates concluded that the respondents were adequately representative of the graduate population, but they provide no statistical analysis to

back their claim. The remaining studies report no attempts to control for respondent bias, and most of the researchers frankly own up to this as a major limitation.

This respondent bias problem is compounded by the low response rates of many of the follow-up surveys. Community college researchers, working with limited resources and — in many cases — with a limited amount of research experience, do not always have the resources or the expertise to conduct first-rate surveys. Walleri (1979, 1981), for example, surveyed the 1977-78 graduates of Mt. Hood Community College (OR) six months after graduation and achieved only a 50 percent response rate. Three years later he surveyed the same cohort of graduates with the help of a professional marketing firm and achieved a 60 percent response rate despite the increased lapse of time since graduation. Though community colleges are charged with the task of conducting follow-up studies, their staffs often do not have the requisite research expertise.

Control Groups

Do community college occupational graduates have an advantage in the labor market over nongraduates? The reports examined in this review provide little evidence one way or the other, because few use adequate control groups. Many studies compare the labor market experiences of program graduates and program dropouts (usually called "early leavers"). But the response rates attained in surveys of dropouts are uniformly low. The Illinois Community College Board (1979), for example, assessed the employment rates of graduates and early leavers from a cohort of 27,663 first-time students who entered vocational programs in the state's community colleges in

Fall 1974. The Board conducted three surveys of cohort members who dropped out or graduated during each of three years: 1974-75, 1975-76, and 1976-77. While response rates for graduates were, respectively, 63 percent, 65 percent, and 74 percent, response rates for early leavers were 38 percent, 35 percent, and 36 percent. Although the study findings indicate that graduates were more likely to be employed and satisfied with their occupations, the low response rates of nongraduates —especially when response bias remains uncontrolled— lend little to the credibility of the study. Other reports that compare graduates with early leavers include Eyler and others (1974), Foellinger and Aspinwall-Lamberts (1980), Lee (1984), Oregon State Department of Education (1982), and Valleri (1979, 1981). In each case the response rates for early leavers are lower than the response rates for graduates. The remaining studies provide no control groups at all.

Control for Prior Employment Experiences

Although some researchers asked graduates if they had been employed in their current occupational field prior to matriculation in the community college, none takes prior employment experience into account in analyzing the college-employment relationship. Of the graduates surveyed by Baratta (1978), 56 percent of those with business-related degrees had been employed in similar fields prior to matriculation, as had 41 percent of graduates from public service fields, 33 percent of graduates from technical curricula, and 18 percent of graduates from health-sciences curricula. Other researchers reporting prematriculation employment experience include (1) Hall and Reed (1979) who, along with the Texas Education Agency (1977),

found that as many as 54 percent of responding Texas community college graduates had been employed in the same field since before matriculation; (2) Lee (1984) who found that 54 percent of the graduates from the Los Rios Community College District (CA) had post-graduation jobs in the same field as their prematriculation employment; and (3) Radcliffe and Baxter (1984) who found a relatively low rate (13.9 percent) prematriculation/post-graduation job congruence. In another study, 17.1 percent of the occupational graduates surveyed indicated "continuation of prior job" when asked how they had obtained their present employment (Illinois Community College Board, 1979). These surveys at least solicite data on the relationship of prematriculation and post-graduation employment; the remaining studies do not.

The importance of controlling for input characteristics (i.e., the characteristics of students at the time of matriculation) is underscored by the findings of some researchers who asked occupational graduates about their primary educational objectives at the time of matriculation. Table I (following page) summarizes findings as they relate to the percent who intended to prepare for a new occupation, the percent who enrolled to improve present job skills ("occupational upgrade"), the percent who enrolled to prepare for transfer or further study, and the percent who enrolled for personal interest or development. The data in Table I should be viewed with caution; no two survey instruments use the same terminology, and this aggregated summary of findings represents my interpretation of survey questions concerning educational objectives. It is nonetheless clear that many students enroll in vocational programs for reasons other than to prepare for a new career. Many want to improve

TABLE I

Main Educational Objectives at Time of College Matriculation

STUDY	Prepare for new employment	occupational upgrade	prepare for further education	personal interest
Clark (1975)	62.5%	10.6%		
Gorter and Collins (1976)	58%	16%	18.1%	5%
Hall & Reed (1979)	57%	20%	13%	8%
IL Community College Board (1979)	56.2%	21.2%		
Kirby (1980)	69.8%	7.9%	4.3%	12.2%
Lach and others (1979)	73.6%	10.4%	6.2%	5.7%
Lee (1984)	41.3%	16.6%	30.1%	9.1%
Maryland State Board for Community Colleges (1983)	53%	18%		26%
Radcliffe & Baxter (1984)	43.9%	13.3%	8.6%	6.6%
Texas Education Agency (1977)	52.1%	25%	10%	11%

Note: Blank spaces indicate that the category was not an option on the survey instrument.

Lee's study is anomalous; the method used to identify the population of occupational students resulted in the unfortunate inclusi of general education and academic graduates. See Lee (1984), pp.

work skills used on a current job, and a significant number cite transfer or personal interest as the primary motivation for enrollment. Any study assessing the success of community college vocational programs in terms of graduate employment rates should take these initial objectives into consideration; most studies reviewed here do not.

Disaggregation of Findings by Program

The desirability of disaggregating follow-up findings by program of study has been well documented. Wilms and Hansell (1982) note that the employment success of vocational program graduates varies by discipline studied. Their findings indicate that those trained in relatively low-prestige, low-paying occupations are more likely to obtain employment related to their courses of study at college than those trained in relatively high-prestige, high-paying occupations. Cohen and Brawer (1982) attribute this variation to competition with baccalaureate graduates. While four-year colleges provide baccalaureate programs in the "high-prestige" areas referred to by Wilms and Hansell, baccalaureate programs for the low-prestige occupations are rare or nonexistent.

Most of the studies reviewed here, however, do not provide sufficient data for program comparisons. Of the 28 institutional reports listed in Appendices B and C, 11 provide no program breakdowns at all. Another 12 report follow-up results by program, but there are not enough respondents within each program category to make meaningful inferences about the differing effects of programs on graduate employment experiences. Nienkamp (1984), for example, received responses from 263 graduates of 25 vocational programs at a branch of St. Louis Community College (MO); in only six of the

programs were there 15 or more respondents (see Figure I, following page). The remaining five studies in appendices B and C provide some basis for program comparison by grouping specific disciplines into broader categories. Baratta (1978), for example, uses the categories "business-related" degrees, "public service" degrees, "technical" degrees, and "health sciences" degrees. Cluster groupings of programs are also used by Clark (1975), Foellinger and Aspinwall-Lamberts (1980), Snyder and others (1972), and Tomsic (1979). Unfortunately, the cluster categories vary from study to study and thus cannot profitably be used for comparison purposes.

One would expect the 12 statewide follow-up studies listed in Appendix D to provide adequate data for program comparisons because of the relatively large numbers involved. Yet disaggregated follow-up results are provided for only three of the eight states represented in Appendix D: Illinois (Illinois Community College Board, 1979; Lach and others, 1979); Oregon (Oregon Department of Education, 1982); and Pennsylvania (Brehman, 1984). As is the case with the institutional reports, the program categories vary from study to study. Furthermore, the state studies have their own problems, as I discuss below.

Statewide Follow-Up Surveys

Most of the state follow-up studies, though centrally administered, are not centrally conducted. Each college surveys its own graduates and forwards to the state agency-in-charge. The Illinois Community College Board (1979) warns that the accuracy of its statewide follow-up report "depends on how well the procedures and definitions were adhered to by the persons responsible for the study at the colleges"

FIGURE I

Distribution of Respondents and Graduates, by Program: Nienkamp (1984)

SURVEY RESPONSES GRADUATES 1982-83 TABLE 4

ASSOCIATE IN APPLIED SCIENCE

PROGRAM	NUMBER OF GRADUATES	NUMBER OF RESPONSES	PERCENTAGE OF RESPONSES
Administrative Medical Assistant	4	4	100%
Advertising Design & Commercial Art	8	8	100%
Automotive Technology	8	5	63%
Bio-Medical Engineering	6	4	67%
Building Inspection & Code Enforcement Technology	2	1	50%
Child Care Assistant	9	7	78%
Child Development Associate	6	3	50%
Clinical Lab Technician	13	10	77%
Criminal Justice - Corrections	13	8	62%
Criminal Justice - Law Enforcement	8	6	75%
Data Processing	46	30	65%
Dental Hygiene	29	25	86%
Electronic Engineering	20	18	90%
Fire Protection Technology	21	14	67%
Funeral Service Education	13	9	69%
Hospitality Restaurant Management	21	17	81%
Human Services	21	15	71%
Industrial Electronic Technology	2	2	100%
Mass Communications	12	8	67%
Mechanical Engineering Technology	5	5	100%
Nursing	36	27	75%
Radiologic Technology	14	12	86%
Respiratory Therapy	18	10	56%
Secretarial	11	8	
Tourism	11	7	
TOTAL:	357	263	

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(p. 4). In another Illinois study, Lach and others (1979) report that the survey response rates by college ranged from 26.2 percent to 91.9 percent. The follow-up data compiled by the State University of New York (1982) were collected by individual colleges using different survey instruments. And in Texas and Pennsylvania, state agencies depend on "cooperating colleges" for data; as a result the number of colleges providing data may vary from year to year. For example, 37 colleges participated in the follow-up study of the 1975-76 graduates of the Texas community colleges, but only 26 colleges participated in the follow-up of 1976-77 graduates (Texas Education Agency, 1977; Hall and Reed, 1979). In short, it is highly probable that the findings presented in statewide studies are not representative of the statewide populations of community college vocational graduates.

Study Weaknesses: Summary

The above paragraphs point to several major limitations of the studies reviewed in this paper. First, they do not follow graduates longitudinally and thus do not provide insights into the age-earnings profiles of community college vocational graduates. Second, the lack of control for respondent bias and the data collection inconsistencies in statewide reports make it highly probable that the findings are not representative of the graduate population. Third, the lack of control groups and the inadequate control for input characteristics of students at the time of matriculation make it very difficult to determine if community college occupational graduates have an advantage in the labor market over nongraduates or those with no formal occupational training at all. Finally, the lack of disaggregated data by program makes it difficult to determine which vocational programs improve the

employability of students and which do not. Any conclusions drawn from the findings of these studies, then, must be viewed only as tentative hypotheses.

PART II: FINDINGS

This section of the paper summarizes findings in five areas: employment rates of graduates; relationship of graduates' employment to curriculum studied at the community college; graduates' opinions concerning the helpfulness of postsecondary vocational training to their career lives; further education of graduates; and employer evaluations of graduates as employees. On the basis of these findings, we can cautiously hypothesize that (1) the success of graduates in securing training-related employment varies greatly by occupation, as Wilms and Mansell have found; (2) graduates, on the whole, feel that they have learned the requisite skills to perform adequately on jobs for which they are trained, but that their vocational training limits their occupational mobility; (3) many vocational graduates, having been exposed to postsecondary education, decide to continue their education; and (4) employers value graduates more for their attitudes and personality traits than for the skills they bring with them from the community college.

Employment Rates

Nearly every study listed in the appendices indicates the employment rates of graduates, that is, the percent who are employed or unemployed. In the studies reviewed here, full-time employment rates of respondents range from 70 percent (Walleri, 1979) to 85

percent (Gorter and Collins, 1978). The authors generally take satisfaction in the fact that most graduates are employed (or otherwise usufully occupied as homemakers, servicemen, or students).

While these figures are important to local colleges for political reasons, they are of little help to evaluators of community college vocational education. First, the methodological flaws cited above in Part I severely limit the ability to draw causal inferences about the relationship between community college education and employment. Second, most studies are conducted shortly after graduation and it is probable that many graduates have not had sufficient time to fine employment. Finally, none of the studies examines the effects of the economy on graduates' employment rates. Researchers at the State University of New York (1982) report the employment rates of SUNY community college graduates and comment:

> One wonders what the data would have looked like had the economy been somewhat different. Many colleges indicated that where the job market presented few opportunities, students simply elected to continue their education in a four-year institution, take any position so that they would at least have some income and in a few cases simply wait it out. (p. 6)

It is ironic that the data most readily available in these follow-up reports are the least helpful in assessing the college-employment link.

Relationship of Job to Vocational Training at College

Twenty-eight of the studies indicate the percent of graduates who are employed in jobs that are related to their community college training. Some reports describe graduates' jobs as "related" or

"unrelated," while others add a middle category called "somewhat related." Most authors do not indicate how this determination is made, but it is clear from the survey instruments appended in the documents that the graduates are simply asked to indicate whether their jobs are "related" or "unrelated." The percent of graduates in "related" jobs ranges, among the reports reviewed here, from 66 percent (Oregon State Department of Education, 1982) to 96 percent (New Hampshire State Department of Education, 1984). Given the different economies of the two states, as well as the different years considered, it is probable that these different employment rates are attributable to economic forces rather than differing educational programs.

The major problem with these data, of course, lies in the interpretation of "relatedness." Clark (1975) surveyed the vocational graduates of Maple Woods Community College (MO) and determined — on the basis of an examination of graduates' job titles — that 81 percent were in jobs directly related to their training, 3.3 percent were in jobs that were partly related, and 15.7 percent were in jobs that were not related. The graduates themselves, however, rated their jobs differently. Only 60.3 percent indicated that their training was appropriate to their jobs, and 17.7 percent indicated that their training was only partly appropriate. Clearly, a more appropriate method of assessing the college-employment relationship is to assess the job titles and job tasks of employed graduates. This is the method employed by researchers at William Rainey Harper College (IL) in their in-depth analyses of graduates from individual vocational programs (Gebert and Lucas, 1980, 1983; Hildebrandt and

Lucas, 1984; Phillips and Lucas, 1977). While the respondents to Harper College surveys are asked to indicate if their jobs are related to the community college course of study, the additional data on job titles and duties provides a more insightful picture.[2]

Nonetheless, the self-reported job relevancy data do confirm that graduates from different programs have different rates of success in the labor market. Data from those studies that disaggregate follow-up findings by program cluster indicate that the percent of employed respondents who are in training-related jobs varies greatly by program:

Tomsic (1979)	from 50 percent in "public service fields" to 88 percent in "health fields"
Clark (1975)	from 50 percent in "middle management" fields to 97.1 percent in "secretarial sciences"
Foellinger and Aspinwall-Lamberts (1980)	from 57.9 percent in "natural science" fields to 94.5 percent in "health" fields
Brehman (1984)	from 30.1 percent in "public service" fields to 70.7 percent in "health services" fields
Illinois Community College Board (1979)	from 79 percent in "distibutive education" to 90.4 percent in "health occupations"

Except for the "Health" clusters, the program categories mentioned above are probably not comparable; in many cases, the are not explained. But these findings clearly indicate that follow-up employment data should be disaggregated by program.

Helpfulness of Vocational Training to Graduates' Career Lives

While the majority of follow-up studies simply assess employment rates and the relationship of employment to training, some include survey items that ask graduates to evaluate the helpfulness of the associate degree program to their career lives. In most cases the graduate is asked to rate, on a numbered Likert-type scale, the helpfulness of the community college program to some aspect of career life such as obtaining a job and performing requisite job skills. The responses to these items are generally favorable, but a pattern emerges when one examines the items that are ranked more favorably than others: the graduates give relatively high marks to the colleges for providing technical skills and knowledge that are requisite to employment, but they are less happy with the colleges in terms of their helpfulness in advancing in a career.

A review of findings illustrates this.[3] Snyder and others (1972) asked graduates to rate the helpfulness of their respective occupational programs in several areas. The respondents were most most satisfied with the helpfulness of the college in teaching "technical knowledge" or "job or learning skills", but the responding graduates were least satisfied with the helpfulness of the college in providing "knowledge of job and career opportunities." Findings from other studies yield similar rankings (from most satisfied to least satisfied):

Hall and Reed (1979)
(1) helpfulness in performing on job
(2) helpfulness in obtaining job
(3) helpfulness in advancing on present job

Baratta (1978) helpfulness in:

(1) technical knowledge and understanding
(2) job skills
(3) getting along with workers
(4) locating information needed on job
(5) understanding employer-employee relations
(6) communication skills
(7) knowing how to get ahead on a job in my indistry
(8) knowledge about career opportunities in field
(9) job advancement
(10) salary increases

Illinois Community College Board (1979) helpfulness in:

(1) learning skills needed on job
(2) knowing how to use tools and equipment
(3) getting along with customers
(4) locating additional information needed on job
(5) understanding employer/employee relations
(6) knowing how to get ahead in a job in my industry

Texas Education Agency (1977) helpfulness in:

(1) obtaining job
(2) performing on job
(3) advancing on job

Selgas (1977) helpfulness in:

(1) technical knowledge
(2) job and learning skills
(3) career knowledge

Kirby (1980) helpfulness in:

(1) preparing for specific job
(2) obtaining job
(3) advancement in present job

Lee (1984) helpfulness in:

(1) performing on the job
(2) obtaining a job
(3) advancing in present job

In all cases, responding graduates were least satisfied with the helpfulness of the college in providing knowledge about career opportunities or in preparing for career advances.

Of course, this pattern may be a function of the fact that most of the follow-up surveys are conducted shortly after graduation; many of the respondents probably have not had a chance to settle into their jobs and discover the paths to advancement in the internal labor markets of their firms. But this pattern may also naturally follow from the fact that many community college vocational programs are designed to prepare students only for entry-level jobs. "These programs are for immediate job entry," Mehallis and Mehallis emphasize, "their completers will most probably need to obtain additional education at some future time just to keep pace with our vastly changing world" (Mehallis and Mehallis, 1983, p. 28). In any case, there is evidence to hypothesize that after obtaining employment, some community college vocational graduates become dissatisfied with the limitations of their career work.

Further Education

That many community college vocational graduates do seek further education is testified to by the surprisingly high percentages of graduates who subsequently enroll for further postsecondary education. Among the studies reporting such data, the percentages range from nine percent (New Hampshire State Department of Education, 1984) to 34.3 percent (Kirby, 1980). Unfortunately, few studies indicate where the graduates are enrolled or what they are studying. Undoubtedly, this further education ranges from baccalaureate studies to enrollment in community colleges or proprietary institutions for skills upgrading. Eyler and others (1974) found that five percent of the students who received vocational associate degrees from the Virginia community

colleges in the late 1960s had earned a bachelor's degree by 1974. Beavers (1982) found that of the 1980-81 graduates from Wytheville Community College (VA) who were continuing their education, 57.7 percent were enrolled in a community college.

Why do students from "terminal" programs continue their education? Perhaps, as noted earlier, because of dissatisfaction with opportunities for advancement. Another factor might be the opportunities for advanced study that exist within the service district of the community college. Snyder and others (1972) found that many graduates of Harrisburg Area Community College's engineering technology program were drawn to a nearby four-year college that offered a bachelor of technology degree. It is also possible that mere exposure to postsecondary education is an inducement to continued studies. Evidence for this is presented by Brehman (1984) in his analysis of associate degree graduates in Pennsylvania. Those receiving "terminal" associate degrees from universities were more likely to continue their education than persons with similar degrees from community colleges; and those receiving their associate degrees from community colleges were more likely to continue on than those receiving their degrees from proprietary institutions (see Table II, following page). The greater the exposure to academe, the more likely the Pennsylvania graduates were to continue on with their education.[4]

Whatever the explanation, the large number of students continuing on with their education may suggest the need for improved educational counseling for community college vocational students. If a person graduates from a vocational program only to decide that he wants a baccalaureate, he may find that many of his lower-division credits will not transfer and that the road to a baccalaureate may be longer

TABLE II

Percent of 1982 Occupational Associate Degree Graduates in the State of Pennsylvania Who Were Pursuing an Advanced Degree Six Months After Graduation

Occupational Program Cluster	University	Community College	Proprietary Institute
Business & Commerce	22.9	20.1	6.0
Data Processing	25.9	15.3	4.5
Health Services	19.3	7.2	1.7
Mechanical and Engineering	31.4	17.6	2.1
Natural Science	38.2	18.9	0
Public Service	23.2	29.3	0

Source: Brehman (1984)

and more expensive than necessary. Researchers in Texas, for example, have found that holders of vocational associate degrees lose more credits in the transfer process than holders of an academic associate degree (Texas Education Agency, 1977).

Employer Evaluations of Graduates

Employer evaluations of graduates indicate that once they are on the job, graduates may be valued more for their attitudes and personal characteristics than for the skills they have acquired at the community college. Thus, the follow-up studies provide evidence that vocational associate degrees may serve a screening function.

When asked to rate graduates as employees, employers generally rated the graduates' skills lower than their attitudes. The employers of Maryland community college graduates, for example, were most satisfied with the graduates' ability to work well with others and to learn new techniques. The Maryland employers were least satisfied with the graduates' performance of requisite job skills and with their familiarity with technical equipment (Maryland State Board for Community Colleges, 1983). The Texas Education Agency (1978) found that employers were most satisfied with graduates' attendance, appearance, and willingness to learn; they were least satisfied with the graduates' communications skills, problem-solving skills, and organizational ability. Similar findings indicating that employers are more satisfied with graduates' attitudes than with their skills are reported by Nespoli and Nair (1979) and by Armstrong (1978). This may be one reason why graduates are dissatisfied with their opportunities for advancement employers may feel that graduates do not yet have the requisite skills

for a promotion. Indeed, Snyder and others (1972) found that employers of graduates from five out of nine vocational programs at Harrisburg Area Community College were least satisfied with their employees' "readiness for additional responsibility."

It should be remembered, though, that these surveys are conducted shortly after graduation, and many graduates may still be learning the ropes on new jobs. Indeed, most employers responding to the surveys reviewed here hold high hopes for associate degree graduates. In a series of employer surveys conducted during the 1970s, researchers at Montgomery Community College (MD) consistently found that only a minority of employers required the associate degree as a job prerequisite. Yet majorities of these employers felt that holding an associate degree usually or always increases one's chances for promotion once hired (Gell and Harkness, 1974; Gell and Jones, 1975, 1976; Gell and Armstrong, 1977; Armstrong, 1978). Isbell and Jonas (1976) came up with similar finsings in their survey of engineering technology grdauates from Lorain County Community College (OH). And even Snyder and others (1972) found that the majorities of employers they surveyed expected associate degree holders to be more productive and more promotable. Longitudinal follow-ups of graduates are needed to see if this is true.

Of course, the findings concerning employers should be viewed cautiously. In most cases, researchers surveyed only the employers of graduates who gave permission for the college to do so. Large proportions of graduates did not give permission, and it is unlikely that the employers contacted are representative of all employers of community college graduates.

Implications of Findings

The findings of the survey reports raise more questions than they answer. Do graduates of community college vocational programs find — without previous experience — jobs in areas for which they are trained? Are the graduates, once hired, stuck in dead-end jobs, or do they find jobs that are part of a career ladder? Are graduates hired primarily on the basis of skills learned in college, or do employers view the associate degree as a proxy for attitudes and behaviors that make a person trainable? Are graduates from some programs more employable than graduates from other programs? Do graduates enter the labor market only to find that they would have been better off with a baccalaureate? Answers to these questions will require a better database than the body of information provided in current follow-up studies.

III. TOWARD AN IMPROVED INFORMATION BASE ON COMMUNITY COLLEGE VOCATIONAL GRADUATES

Two research efforts could be undertaken to improve our knowledge about graduates from community college vocational programs: (1) longitudinal studies of persons entering community college vocational programs with the intention of training for employment in a new job; and (2) surveys of representative samples of employers. These should be statewide efforts that are centrally administered and, when possible, centrally conducted. The data collection effort, then, would not rely solely on overburdened and inexperienced institutional researchers at individual community colleges.

Longitudinal Studies

An effort should be undertaken to identify and track cohorts of students who enter the community college with the intention of acquiring vocational training in specific fields (e.g., printing, auto mechanics, etc.) for the purpose of subsequent employment. Modeled somewhat after the Cooperative Institutional Research Project's annual survey of first-time, full-time freshmen, this longitudinal effort would begin with an annual survey of students enrolled in entry-level occupational courses in the state's community colleges or in a sample of those colleges. The survey instrument would solicit demographic and occupational background information, as well as the main reasons students have for enrolling in the course. Only those students who indicate that their primary educational intent is to prepare for a new job in a particular occupational field will be chosen for subsequent follow-up analyses.

Annual follow-up surveys of these job seekers should be conducted by research experts at a central state office up through five years after receipt of the associate degree or five years after the student has failed to reenroll for three succeeding semesters. The follow-up surveys will solicite information on the subjects' current activities (e.g., employed, military, enrolled in another school, etc.) If the respondent is employed, he will be asked to give his job title and a description of his job. This information will be used to determine if the respondent is employed in a job that is directly related to his vocational program. The survey will also solicit information on remuneration, on-the-job training, job satisfaction, and —if applicable— reasons for continuing with

formal education. Rather than a one-shot picture of students employment experiences after leaving the college, this research effort will provide a series of pictures for at least a short period of time.

Of course, this is a big undertaking. The researchers would have to secure the cooperation of the individual colleges in administering surveys in vocational classes and in notifying the central research office when a student changes addresses, leaves the college without reenrolling, or graduates with an associate degree. Procedures would have to be developed for dealing with the problem of duplication, i.e., students who enroll in concurrent or subsequent entry-level vocational courses. Efforts would have to be undertaken to identify the specific occupations (perhaps through the Dictionary of Occupational Titles) for which each vocational program is designed. And persons experienced in survey research (perhaps from the National Opinion Research Center) would have to be consulted in developing survey instruments and designing survey procedures. Yet, properly conducted, the longitudinal analyses of entering students will provide, by program, detailed information on the employment experiences of those who come to the community college for job training. Input data collected at the base year will allow researchers to control for socioeconomic status, ability, and prior job experience.

Survey of Employers

After researchers identify the types of jobs for which community college vocational programs provide training, the central research office should survey representative samples of the employers in the state that hire workers for those jobs. The survey instrument

should solicit information about the requisite and preferred education levels of applicants. It should also request the employers to indicate if they have hired associate degree graduates and if the associate degree confers with it the expectation of higher productivity and more rapid advancement (in relation to workers without the associate degree). This information will complement the data collected in the longitudinal studies by providing an understanding of employer expectations of associate degree holders and of the use employers make of the associate degree as a screening device.[5]

CONCLUSION

Will the benefits of the extensive data collection effort outlined above in Part III outweigh the costs? That is the subject of another paper. But it is worth considering the cost of the present data collection efforts undertaken by individual community colleges, especially in light of the severe limitations of the data that are produced. (As an aside it should be mentioned that many of the surveys reviewed in this paper were undertaken to provide data required of the federal government for its VEDS—Vocational Education Data Systems—database. The numerous flaws of VEDS have been well documented elsewhere; see Barnes, 1984). Considerable resources are already being used to collect data on community college vocational program graduates. Those resources should be redirected to a more effective data collection system.

The fundamental problem of current follow-up efforts lies in the

inability of many community colleges to marshall the resources and expertise that are required. A more centralized effort administered by experts in survey research would provide more useful data for the assessment of the link between community college vocational education and employment.

APPENDIX A:

INSTITUTIONAL STUDIES OF GRADUATES FROM INDIVIDUAL PROGRAM AREAS

INSTITUTIONAL STUDIES OF GRADUATES FROM INDIVIDUAL PROGRAM AREAS

AUTHOR(S)	PROGRAM AREA	POPULATION SURVEYED	SURVEY DATE	RESPONSE RATE	EMPLOYMENT DATA GATHERED
Barsaleau & Walters (1977); Cosumnes River College (CA)	Animal Health Technology	all persons graduating from 1972 through 1976 (N=68)	early 1977	70%	employment rate; job/program relationship; plans to continue in field
Gebert & Lucas (1983) William Rainey Harper College (IL)	Dietetic Technicians	persons graduating from program between 1980 and 1982 (N=47)	early 83	92%	employment status; number of years experience in field; job/program relationship; salaries; satisfaction with job; tasks performed
Gebert & Lucas (1980) William Rainey Harper College (IL)	Dietetic Technicians	persons graduating from program between 1975 and 1979 (N=47)	Fall 1979	83%	same as above
[illegible]d (1975) [illegible] Angeles City Col.	Dental Hygiene	those graduating from 1971 through 1974	Fall 1974	51%	job/program relationship; salaries; fringe benefits; duties performed; graduate opinions concerning their competence
Hildebrandt & Lucas (1984); William Rainey Harper College (IL)	Legal Technology	persons graduating in 1983; N=59	6 mos. after graduation	81%	job/program relationship; employment status; experience prior to matriculation; salaries; further education; tasks performed
Johnson & others (1976 St. Louis CC (MO)	Hotel/Restaurant/Institutional management	persons graduating from 1963 through 1973 (?) N=159	early 74 (?)	96%	employment status; job/program relationship
Phillips & Lucas (1977) William Rainey Harper College (IL)	Operating Room Technicians	persons graduating from 1973 through 1976 N=55	Fall 1976	55%	employment status; job satisfaction; graduate opinions about program helpfulness
Scott (1984) Bakersfield College	Radiologic Technology	all who graduated between 1971 & 1982	early 84	52%	employment rate; job/program relationship

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APPENDIX B:

INSTITUTIONAL FOLLOW-UP SURVEYS OF ALL VOCATIONAL GRADUATES

INSTITUTIONAL SURVEYS OF ALL PROGRAM GRADUATES

AUTHOR(S)	POPULATION SURVEYED	SURVEY DATE	RESPONSE RATE	EMPLOYMENT DATA GATHERED
Baratta (1978) Moraine Valley CC (IL)	persons awarded AAS degrees and certificates in 1976-77 (N=366)	early 78	86%	graduate evaluations of helpfulness of program; employment status; salaries; experience prior to matriculation
DeVuyst and others (1978); Gateway Technical Institute (WI)	all 1976-77 and 1974-75 vocational graduates (N=1,402)	Dec. 77-Jan. 78	92% of 1976-77 class; 57% of 1974-75 class	employment status; salaries; job/program relationship
Foellinger & Aspinwall-Lamberts (1980); Lane CC (OR)	vocational students who graduates or dropped out in 1977-78 (N=748)	Spring 79	52% grads 26% DO's	employment status; job/program relationship; salaries; further education
Gorter & Collins (1978) Mercer County CC (NJ)	1976 grads (N=740) and 1973 grads (N=580)	Summer 77	73% & 54%	employment status; further education; satisfaction with job
Hughes (1981) Mississippi County CC (AR)	vocational students graduated from 1975 through 1981 (N=161)	Summer 81	67%	job/program relationship; employment status
Kirby (1980) Oakton CC (IL)	all 1978 graduates (n=423); findings are disaggregated by major emphasis (vocational graduates; liberal arts graduates)	late 1979	62%	graduate evaluations of helpfulness of program; employment status; job/program relationship; salaries; job satisfaction
Lee (1984) Los Rios CC District (CA)	Students enrolled in vocational programs in Fall 1981 or Spring 1982 but who did not reenroll in Fall 1982	Spring 83	51.8%	employment status; further education; job/program relationship; experience prior to matriculation; graduate evaluations of helpfulness of program

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INSTITUTIONAL SURVEYS OF ALL PROGRAM GRADUATES (con't)

AUTHOR(S)	POPULATION SURVEYED	SURVEY DATE	RESPONSE RATE	EMPLOYMENT DATA GATHERED
Nienkamp (1982) St. Louis CC at Forest Park (MO)	all 1980-81 vocational graduates with AAS degree (N=377)	Nov. 81	73%	job/program relationship; further education; salaries
Nienkamp (1984) St. Louis CC at Forest Park (MO)	all 1982-83 vocational graduates with AAS degree (N=357)	Nov. 83	74%	employment status; job/program relationship; graduate evaluations of helpfulness of program
Radcliffe and Baxter (1984) Howard CC (MD)	all 1982 graduates, including transfer and vocational students (n=253)	late 1982	67%	employment status; job/program relationship; graduate evaluations of helpfulness of program
Tomsic (1979) Lorain County CC (OH)	all 1978 graduates, including transfer and vocational students (N=612)	Fall 1978	97%	employment status; salaries; job/program relationship; further education
Selgas (1977) Harrisburg Area CC (PA)	all 1974-75 graduates, including transfer and occupational students (N=696)	1977	65%	employment status; job/program relationship; job satisfaction; further education; graduate opinions about helpfulness of program
Lakeland CC (1975) (OH)	116 students graduating from four technology programs in 1974	late 1974	89%	job/program relationship; salaries
Smith & others (1978) Community College of Denver (CO)	919 students graduating in 1977; 80% graduated vocational degrees	Summer 77	76%	employment status; wages; job/program relationship; further education; helpfulness of the college program
Valvoda & others (1977) Lakeland CC (OH)	463 June 1975 graduates; 57% received occupational degrees	Just prior to graduation	93%	job/program relationship/ mean salaries; further education
Malleri (1981) Mt. Hood CC (OR)	717 students who graduated in 1977-78; 1,206 students who earned at least 12 units during 1977-78, but who did not reenroll in Fall 78 or Winter 79	Spring 81	60% grads 40% DOs	further education; job/program relationship; salaries; opinion concerning helpfulness of program
Malleri (1979) Mt. Hood CC (OR)	same as above	Spring 79	50% grads 14% DOs	same as above

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APPENDIX C:

INSTITUTIONAL FOLLOW-UP STUDIES OF GRADUATES AND THEIR EMPLOYERS

GRADUATE/EMPLOYER SURVEYS

Study	Student Population Surveyed	Survey Date	%	Employment Data Gathered	Employers Surveyed	%	Employer Data Gathered
Armstrong (1978) Mongomery College (MD)	all 1977 graduates	1977 (?)	?	?	208 employers of graduates working in jobs directly related to college program	75%	minimum educational requirements for employees' jobs; opinions concerning employees' works attitudes and abilities
Beavers (1982) Wytheville CC (VA)	235 occupational graduates; unclear when graduated	Spring 82	60%	employment status; further education	109 employers of respondents who ok'd college contact	91%	career advances of employees; opinions about adequacy of proparation
Clark (1975) Maple Woods CC (MO)	vocational graduates of 1970-74; N=214	Fall 74	65%	employment status; further education; length of time on job; job/program relationship; opinions concerning helpfulness of college to career	105 employers named by respomdents	82%	employer opinions concerning job training, skill performance of employees, and their work attitudes.
Gell and Harkness (1974) Montgomery College (MD)	all 1972-73 grads	Fall 73 ?	?	?	107 employers named voluntarily by respondents	63%	opinions concerning associate degree as job prerequisite and evaluations of graduates as employees
Gell and Jones (1975) Gell and Jones (1976) Gell and Armstrong (1977)	Reproduces the Gell and Harness study (above) using employers identified in follow-up surveys of 1973-74, 1974-75, and 1975-76 graduates.						
Isbell & Jonas (1976) Lorain County CC (OH)	engineering technology graduates, 1964-1975; N=485	1976 (?)	?	?	29 personnel officers and and 65 immediate supervisors at 122 firms. Identified voluntarily by respondents	?	opinions concerning the associate degree as job prerequisite; evaluation of graduates as employees
Kuznik (n.d.) Univ. of Minnesota Tech. College	all graduates, 1968-1973	1974 (?)	55%	job/program relationship	employers of all 402 respondents who were employed	62%	employer ratings of college training; opinions concerning graduates as employees
Nespoli and Nair (1979) Howard CC (MD)	1978 graduates	1979 (?)	?	?	34 employers of graduates employed full-time in areas related to community college studies	99%	associate degree as job prerequisite; evaluations of graduates as employees
Snyder and others (1972)	405 students who graduated from 1966 through 1970	1971	79%	employment status; job/program relationship; salaries; further education; job satisfaction	159 employers and 199 supervisors of those respondents who ok'd college contact	70%	associate degree as job prerequisite; ratings of training provided at the college; evaluations of graduates as employees

response rate

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APPENDIX D:

Statewide Follow-Up Studies

STATEWIDE FOLLOW-UP STUDIES

STATE	AUTHOR(S)	POPULATION SURVEYED	SURVEY DATE	RESPONSE RATE	EMPLOYMENT DATA GATHERED
IL	Illinois CC Board (1979)	all first-time freshmen (N=27,663) who entered occupational programs at the IL community colleges in Fall 1974. Three surveys were conducted: one for those who dropped out or graduated in 1974-75; one for those who dropped out or graduated in 1975-76; one for those who dropped out or graduated in 1976-77	Fall 75 Fall 76 Fall 77	63% grads 38% DOs 65% grads 35% DOs 74% grads 36% DOs	employment status; further education; salaries; satisfaction with job; graduate evaluations of helpfulness of program
IL	Lach & others (1979)	1977-78 occupational program graduates from from each og Illinois's community colleges (N=14,771)	Jan. 1979	53%	graduate evaluations of helpfulness of program; further education; employment status; experience prior to matriculation; job/program relationship; satisfaction with job
MD	Maryland State Board for Community Colleges (1983)	the 7,120 students who graduated in 1980. Also surveyed were the employers of 1,023 of those graduates. Survey respondents included those with transfer degrees and those with academic degrees; findings are reported separately	Spring 81	58% studs 67% emps.	employment status; job satisfaction; job/program relationship; salaries; employer evaluations of graduates as employees
NH	New Hampshire State Department of Education (1984)	the 1,130 students graduating from the state's postsecondary technical institutes in 1984. Methodology not explained	Nov. 84 ?	?	employment status; job/program relationship
NY	State University of New York (1982)	Survey of all 1980 graduates from the SUNY community colleges. 13,363 graduates received vocational degrees	1981	82%	employment status; further education; salaries
PA	Brehman (1984)	Survey of all persons in PA who were awarded the associate degree in 1982. Findings are disaggregated by program cluster and by type of institution.	6 months after graduation	74%	employment status; job program relationship; further education

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STATEWIDE FOLLOW-UP STUDIES

STATE	AUTHOR(S)	POPULATION SURVEYED	SURVEY DATE	RESPONSE RATE	EMPLOYMENT DATA GATHERED
OR	Oregon State Department of Education (1982)	3,138 persons who graduated from vocational programs in 1980; also, 4,320 persons who enrolled in vocational programs, who did not earn a degree, and who did not reenroll in following academic years. In addition, the survey included 803 supervisors of the early leavers and of the graduates	early 81	56% grads 18% DOs 65% emps	employment status; job/program relationship; further education; salaries; employer evaluations of graduates as employees
TX	Texas Education Agency (1977)	students who graduated from 37 "cooperating" colleges in 1975-76. Of the respondents, 60% were occupationsl graduates. (Total N=?)	Fall 1976	57% on average by college	employment status; job/program relationship; experience prior to matriculation
TX	Texas Education Agency (1978)	employers of the 1976-77 graduates from four "cooperating" colleges (N=?)	Fall 77?	74% ?	employer evaluations of graduates as employees
TX	Hall & Reed (1979)	8,455 graduates (1976-77) from 26 cooperating colleges	Fall 77	57%	employment status; further education; job/program relationship; graduate opinions of program helpfulness; salaries; experience prior to matriculation
VA	Eyler and others (1974)	11,623 students who were enrolled in community college vocational programs in VA from Fall 1966 through Fall 1969. The survey also included 3,433 students who graduated from those vocational programs during the same time period	Spring 1972	73% grads 56% DOs	employment status; job/program relationship; salary; further education
VA	Virginia State Dept. of Education (1977)	all 1974-75 and 1975-76 graduates of the virginia community colleges. Among the respondents were 4,078 vocational graduates	late 76 ?	72% (74-75) 80% (75-76)	employment status; job/program relationship

Note: The studies cited above from the states of New Hampshire and Pennsylvania are conducted on an annual basis; the earlier studies are also in the ERIC database.

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Notes

1. This two-page Fact Sheet is based on an analysis of data collected by the National Center for Education Statistics.

2. In some cases, the difficulty of determining training/employment ralationship lies in the ill-defined nature of the vocational program subject area. Barsaleau and Walters (1977), for example, survey graduates from an "animal health technician" program. Their research included a survey of local veterinarians to determine how such technicians are viewed in the profession. Some of the responding veterinarians indicated that they didn't know exactly what an animal health technician does.

3. Here I am reviewing only graduate assessments of the helpfulness of the program in job-related activities, not the effect of the program in other areas such as aesthetic appreciation.

4. Of course, as Table I indicates, a good number of students enter vocational programs with the intent of transferring.

5. By surveying a representative sample of all employers, we will avoid the problems encountered by earlier researchers who contacted only the employers of graduates who gave the researchers permission to do so.

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